CW#72: 30-60-90 Triangles

Geometry

*CLASSROOM COPY - DO NO WRITE ON THIS!*

*Record all figures into your notebook and show all work!*

Do Now:

Quick Review 45-45-90 Triangles:

|  |  |
| --- | --- |
| 1) Find the value of x: | 2) Find the value of x: |

Explore:

Copy the triangles below into your notebook.

|  |  |  |
| --- | --- | --- |
| 2  1 | 4  2 | 6  3 |
| 3.. Answer the following questions in your notebook:  a) Find the length of the missing leg of each triangle (most simplified radical form)  b) Draw a prediction for what the next two triangles would look like if they followed this pattern. Label the sides and the angles.  c) Predict: If you had a right triangle such that one side length was 100 and the hypotenuse was 200, what would you predict the length of the missing side be? What must be true of the angles inside the triangle for your prediction to be true? | | |
| 6. Generalize your observations and create a rule you could use to find the length of the hypotenuse of any \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ triangle with side length *n*.  Draw a picture and an example to go with your rule. | | |

Practice:

Find the value of each variable. Write your answers in simplest radical form.

|  |  |  |
| --- | --- | --- |
| 1) | | 2) |
| 3) | | 4) |
| 5) | | 6) |
| 7) Use the figure at the right to complete the table below. | | ⁰  ⁰ |
| 8) In the diagram below, which side length is the longest?     1. *a* 2. *b* 3. *c* 4. *d* | | 9) A 24 foot long bleacher stand has a base angle 30°. How high above the ground is the last row of seating?    ⁰ |
| 10) The altitude of an equilateral triangle is 12 centimeters. Find the perimeter of the triangle. Round to the nearest tenth. | | 11) The perimeter of a rectangle is 32 feet. The length is three times as long as the width. Find the length of the diagonal. Round to the nearest tenth. |
| 12) Each figure below is a 30°-60°-90° triangle. Find the value of x. Round to the nearest tenth. | | 13) The perimeter of an equilateral triangle is 45 meters. Find the length of an altitude. Round to the nearest tenth. |
| 14) A symmetrical canyon is 4850 feet deep. A river runs through the canyon at its deepest point. The angle of depression from each side of the canyon to the river is 60°. Round to the nearest tenth. | a. Find the distance across the canyon  b. Find the length of the canyon wall from the edge to the river | |
| 15) Find the value of x and y. Write your answer in simplest radical form. | 16) You make a guitar pick that resembles an equilateral triangle with side lengths of 32 millimeters. What is the approximate height of the pick? (Assume BD is a | bisector of AC)  *B* | |

17. A car is turned off while the windshield wipers are moving. The 24 inch wipers stop, making a 60° angle with the bottom of the windshield. How far from the bottom of the windshield are the ends of the wipers?

